NEW BEDFORD TEXTILE SCHOOL

CATALOGUE

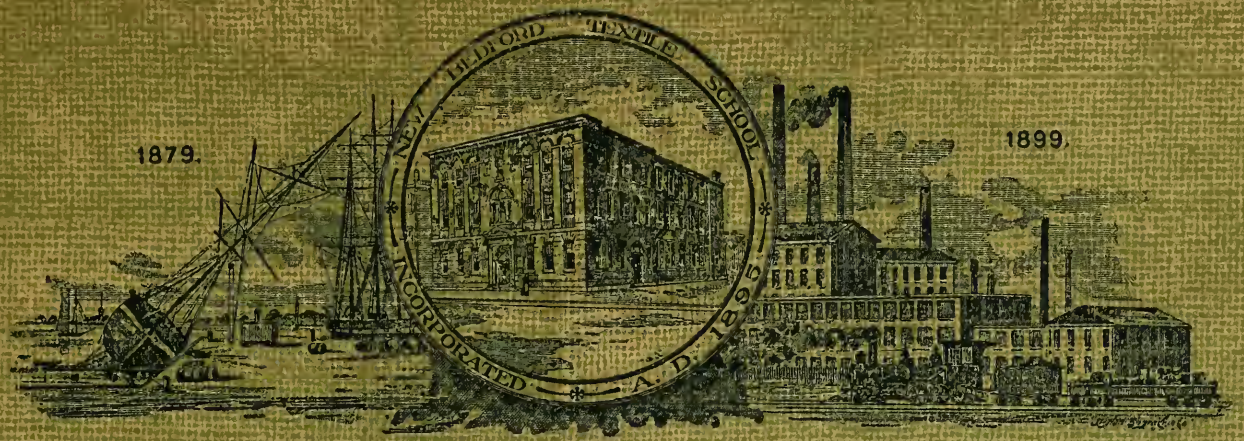
1899 - 1900

THE LIBRARY

SOUTHEASTERN MASSACHUSETTS TECHNOLOGICAL INSTITUTE
UNITATE FORTIOR
1895

Digitized by the Internet Archive
in 2012 with funding from
Boston Library Consortium Member Libraries

http://archive.org/details/catalogue00newb



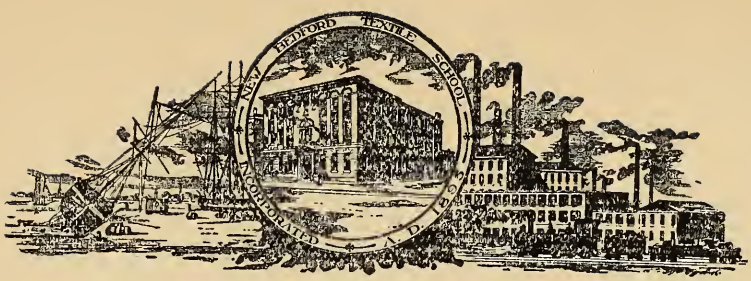
NEW BEDFORD TEXTILE SCHOOL,

NEW BEDFORD, MASS.

Catalogue 1899–1900.

FOUNDED BY THE COMMONWEALTH OF MASSACHUSETTS
AND THE
CITY OF NEW BEDFORD.

SMU
ARCHIVES



CATALOGUE

OF THE

NEW BEDFORD TEXTILE SCHOOL

NEW BEDFORD, MASSACHUSETTS

1899–1900

SMU
ARCHIVES

8595

.....Trustees.....

1899.

PRESIDENT, GEORGE E. BRIGGS. TREASURER, ISAAC B. TOMPKINS, JR.

CLERK, ROBERT BURGESS.

On Behalf of the Commonwealth of Massachusetts,

HON. ANDREW G. PIERCE, Ex-Mayor, and late Treasurer Wamsutta Mills.

JOSEPH F. KNOWLES, Treasurer of Acushnet Mills and Hathaway Mfg. Co.

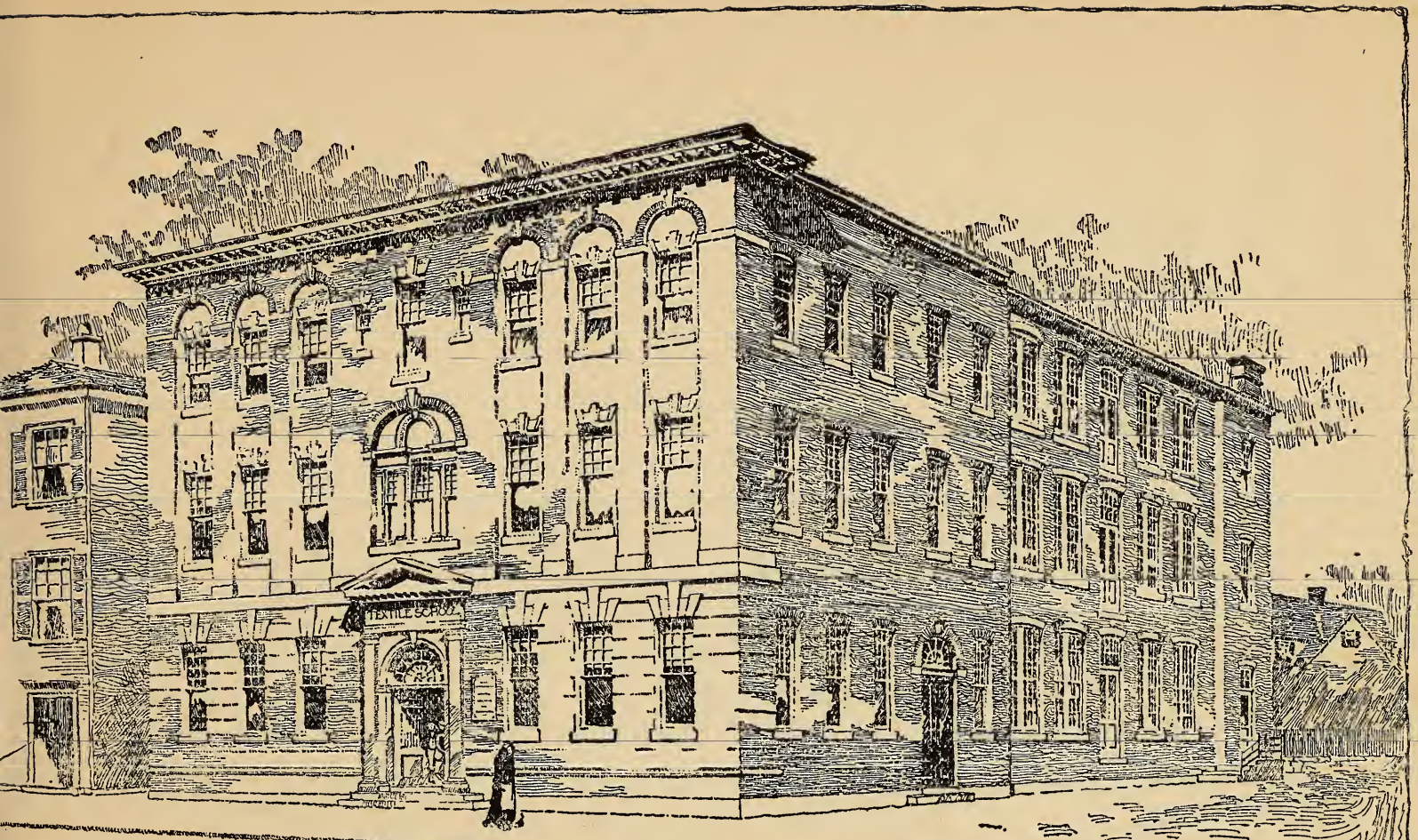
Ex-Officio on the part of the City of New Bedford.

HON. CHARLES S. ASHLEY, MAYOR OF NEW BEDFORD.

WILLIAM E. HATCH, SUPERINTENDENT OF SCHOOLS, NEW BEDFORD.

George A. Ayer, Agent Bristol Mfg. Co. and City Mfg. Corp.
George E. Briggs, Director Whitman Mills.
Robert Burgess, Agent Grinnell Mfg. Co.
Charles O. Brightman, Ex-Commissioner Public Works.
Hon. Wm. W. Crapo, Ex-M. C., President Wamsutta Mills.
Philip Y. DeNormandie, Agent Potomska Mills.
Hon. Lemuel LeB. Holmes, District Attorney.
Jonathan Howland, Jr., Ex-Member School Committee.
George W. Hillman, Ex-Member School Committee.
Nathaniel B. Kerr, Agent Boott Mills, Lowell, Mass.
John W. Knowles, Agent Acushnet Mills.
Wm. M. Lovering, Supt. Whittenton Mills, Taunton, Mass.
Hon. David L. Parker, Postmaster and Ex-Mayor.
Samuel Ross, Member of Legislature and Secretary National Mule Spinners' Association.
Hon. Rufus A. Soule, State Senator and President Dartmouth Mills.
George R. Stetson, President N. B. Gas and Edison Light Co.
Samuel J. Smith, Loom Fixer, Wamsutta Mills.
Isaac B. Tompkins, Jr., Ex-President Board of Trade.
Herbert E. Walmsley, Agent Wamsutta Mills.
John Wilkinson, Weaver, Potomska Mills.

MANAGING DIRECTOR, CHRISTOPHER P. BROOKS.



THE NEW BEDFORD TEXTILE SCHOOL

Calendar.

....Fall Term, 1899....

Wednesday, September 13, 1899. Entrance Examination for New Bedford Day Students at 10 a. m.

Friday, September 29. Entrance Examination for non-Resident Day Students at 10 a. m.

Monday, October 2. Beginning of the Fall Term for Day Students.

Wednesday, October 11. Entrance Examination for Evening Students at 7.30 p. m.

Monday, October 23. Beginning of Fall Term for Evening Students.

Thursday, November 30. Thanksgiving Day. Vacation.

Friday, December 22 to Monday, January 8, 1900, Christmas Recess.

Friday, January 26, 1900. End of Fall Term.

Monday, January 29. Annual Meeting of Corporation.

.....Spring Term, 1900.....

Monday, January 29. Beginning of Spring Term.

Thursday, February 22, Washington's Birthday. Vacation.

Tuesday, April 3, End of Spring Term and Close of School Year for Evening Students.

Thursday, April 19, Patriots' Day. Vacation.

Wednesday, May 30, Memorial Day. Vacation.

Wednesday, June 6, End of Spring Term and of Academic Year.

The Building.

The New Bedford Textile School building is a spacious brick structure, centrally located on Purchase street, the principal business street of New Bedford, and is the first building erected exclusively for the purpose of a textile technical school in the United States.

The style of architecture employed in its construction is "Old Colonial," an adaptation of the work done in Maryland, Virginia, and parts of New England during the eighteenth century. The substitution of brick for wood in the general construction was the marked departure from the New England mode of building as found in Maryland and Virginia. The brick was usually laid with wide joints in Flemish bond, each course being made by alternate headers and stretchers, a header coming over the stretcher below.

A fine effect was thus attained, both in color and design.

The dignity and repose of these old buildings were primarily based on their symmetry of plan, and their aesthetic excellence was due to this fact, coupled with judicious and legitimate adaptation of classic motives to decoration. To the entire absence of false precedent was also, to some extent, their merit of excellence due. The craftsmen and builders of those days were compelled to resort for their precedents to the few books on the "Orders," which were mostly of English origin. The rules of Pallidio and Vignola, as interpreted by Gibbs

and Langley through Sir Christopher Wren and Inigo Jones, were faithfully adhered to in spirit.

The facade of the New Bedford Textile School is an example of this period, and is an admirable addition to the architecture of the public buildings of the city.

The building is of red brick, with trimmings of Indiana limestone. The Purchase street entrance opens on an ample vestibule, from which rises a staircase leading to the second and third floors. On either side of this on the first floor are corridors which communicate with the machinery room. This is 65x70 feet, occupies the entire width and about half the length of the building, and is well provided with windows. West of this room are the boiler and engine rooms. On either side of the front vestibule on the first floor are rooms, one of which is used for an office and the other as an exposition room, where samples of the finished work of the students can be displayed. Opening from the machinery room on either side are toilet rooms, and on the north side entrance to the machinery room is afforded by a corridor.

The second floor is practically a duplicate of the first. One room at the front of the building is utilized as a class room, and one, which is considerably larger, as a lecture hall. On this floor is a locker room for the students.

The third floor is devoted to the designing and hand loom weaving departments. The well lighted studio at the front of the building is occupied by the designer and his assistants and furnished with numerous appliances for the

most advantageous teaching of fabric designing, while the large machinery room on the same floor is utilized for hand looms, and a portion of it on the north side for machine drafting.

The main building is 64x100 feet and has an annex in the rear, 12x67 feet, for the engine and boiler rooms with a rear staircase reserved for use in case of fire.

In designing the school attention has been paid to arranging it in the most suitable manner for the purposes of imparting textile instruction, but the rear portion will also serve to give an object lesson in cotton mill engineering.

The structure is of the slow burning mill construction type, approved by the leading fire insurance associations and mill engineers, while the general equipment of the school is also illustrative of the best methods of heating, ventilating, humidifying and fire protecting mills.

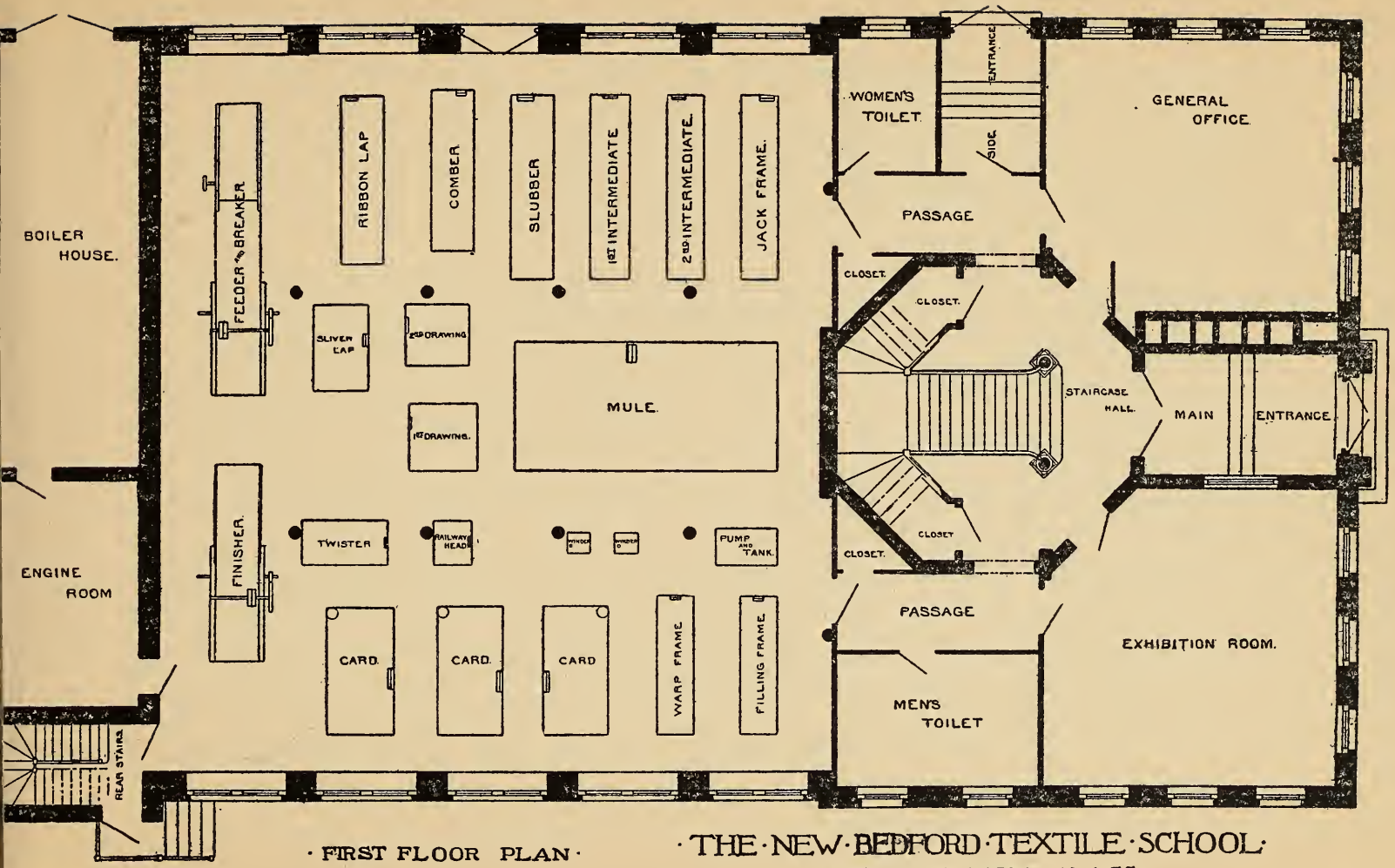
The fire protection has been designed and installed by the General Fire Extinguisher Co. of Providence, the well known Grinnell sprinkler being used; the American Air Moistening Co. have installed a complete humidifying apparatus, while the heating and ventilation illustrate the ordinary methods used in mills, except in that portion of the building which is devoted to lectures and recitations, where the usual methods of heating and ventilating school rooms are used; the whole equipment having been approved by the Massachusetts State Inspectors of public buildings.

Machinery.

While some other schools exist which have more machinery for manipulating different fibres, such as wool, silk, etc., there is no textile technical school in the world which has so wide a variety of exclusively cotton machinery in its equipment, and the machinery of the school may be pronounced as being almost perfect for the purpose of a technical school which is to be devoted exclusively to the teaching of cotton manufacturing. Almost every maker of cotton machinery in the United States is represented in the school, together with several English builders, giving the student an admirable opportunity of becoming acquainted with machines varied in construction, although utilized for performing the same work.

The machinery is sufficiently complete to enable the raw cotton to be dealt with in the school at the several processes until it becomes a woven fabric; in fact, there is a sufficient surplus of machinery of the more important kinds to enable independent experiments to be conducted by the students, under the direction of their instructors.

The student thus has the opportunity of acquainting himself with the construction and operation of machines such as he may come in contact with later in assuming a position in a mill, together with the setting of the same, and calculations connected therewith.



· FIRST FLOOR PLAN ·

· THE · NEW · BEDFORD · TEXTILE · SCHOOL ·
NEW · BEDFORD · MASS ·

The knowledge that he obtains is not confined, as in some schools, to any one make of machinery, and he thus becomes a more valuable officer to any firm securing his services after graduating, and, owing to this wider knowledge, has a much better opportunity of securing a position.

Cotton, Carding and Spinning Dept.

The department containing the largest amount of machinery is the cotton picking, carding and spinning department. In one large room are arranged the following machines:

1 automatic feeder made by the A. T. Atherton Machine Co., Pawtucket, R. I.

1 single beater breaker lapper made by the A. T. Atherton Machine Co., Pawtucket, R. I.

1 single beater finisher lapper made by the Howard & Bullough American Machine Co., Pawtucket, R. I.

1 revolving flat card, made by the Mason Machine Works, Taunton, Mass.

1 revolving flat card, made by the Howard & Bullough American Machine Co., Pawtucket, R. I.

1 revolving flat card, made by the Saco & Pettee Machine Shops, Newton Upper Falls, Mass., and Biddeford, Maine.

1 sliver lap machine made by John Hetherington & Sons, Manchester, England, William Firth, Boston, Mass., Agent.

1 ribbon lap machine made by the Mason Machine Works, Taunton, Mass.

1 comber, made by John Hetherington & Sons, Manchester, England, William Firth, Boston, Mass., Agent.

1 railway head, made by the Mason Machine Works, Taunton, Mass.

1 first drawing frame with electric stop motion and metallic rolls, made by the Howard & Bullough American Machine Co., Pawtucket, R. I.

1 second drawing frame with electrical stop motion and metallic rolls, made by the Saco & Pettee Machine Shops, Newton Upper Falls, Mass., and Biddeford, Maine.

1 slubber, made by the Woonsocket Machine & Press Co., Woonsocket, R. I.

1 first intermediate, made by the Providence Machine Co., Providence, R. I.

1 second intermediate, made by the Howard & Bullough American Machine Co., Pawtucket, R. I.

1 jack roving frame, made by Dobson & Barlow, Ltd., Bolton, England, Stoddard, Haserick, Richards & Co., Boston, Mass., Agents.

1 warp spinning frame, made by the Whitin Machine Works, Whitinsville, Mass.

1 filling spinning frame, made by the Howard & Bullough American Machine Co., Pawtucket, R. I.

1 spinning mule, made by the Mason Machine Works, Taunton, Mass.

1 twister arranged both for wet and dry work, made by the Draper Co., Hopedale, Mass.

1 winding machine, made by the Universal Winding Co., Boston, Mass.

These are in addition to several machines for card grinding, stripping, yarn testing, sizing, etc.

There is a sufficient complement of machinery to enable some students to be working on coarse and others on fine work at the same time, and a sufficient amount of spare machinery to enable experiments to be conducted and instruction to be given in setting and fixing some of the machinery without interfering with the operation of the ordinary work of the School.

This is especially valuable to students in their graduating year.

The power for this room is transmitted from the engine by means of a Lambeth rope drive and an approved system of power transmission by shafting and pulleys which has been installed by Jones & Laughlins, Limited, of Pittsburg, Pennsylvania.

The department is heated throughout by steam heat and humidified by the system of the American Moistening Co., Boston, Mass.

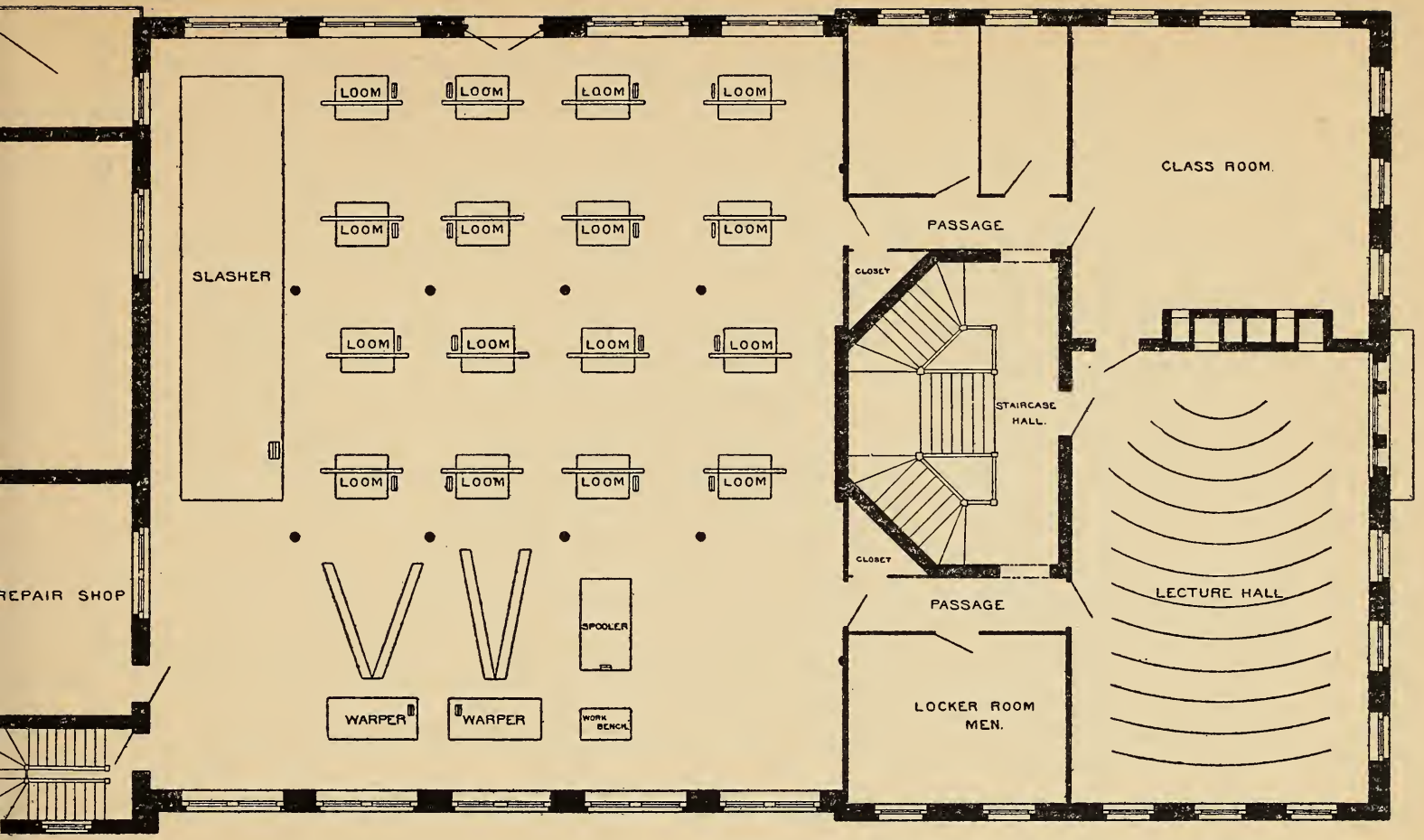
Warp Preparation and Weaving Dept.

The Weaving Department is in the main room on the second floor, the warp preparation machinery being also placed in the same room.

The equipment consists among other machinery, of:

1 spooler, from the Draper Co., Hopedale, Mass.

1 warper, made by T. C. Entwistle, Lowell, Mass.



·SECOND FLOOR PLAN·

·THE·NEW·BEDFORD·TEXTILE·SCHOOL·
NEW·BEDFORD·MASS·

1 warper, made by the Draper Co., Hopedale, Mass.

1 cone winder, from the Howard & Bullough American Machine Co., Pawtucket, R. I.

1 reel, made by the Whitin Machine Works, Whitinsville, Mass.

And the following very complete assortment of looms:

1 Crompton gingham loom, 4x1 box, made by the Crompton & Knowles Loom Works, Worcester, Mass.

1 fancy cotton Crompton Loom, 6x1 box with 20 harness dobby, made by the Crompton & Knowles Loom Works, Worcester, Mass.

1 Crompton Leno Loom, 4x1 box with 20 harness dobby, made by the Crompton & Knowles Loom Works, Worcester, Mass.

1 Knowles Turkish Towel Loom, 3x1 box, with 12 harness dobby, made by the Crompton & Knowles Loom Works, Worcester, Mass.

1 Knowles gem dress goods loom, 4x4 boxes, 20 harness.

1 Stafford Leno Loom with 20 harness dobby made by the Crompton & Knowles Loom Works, Providence, R. I.

1 Stafford fancy cotton loom with 25 harness dobby, made by the Crompton & Knowles Loom Works, Providence, R. I.

1 Stafford jacquard loom with 400 hooks, made by the Crompton & Knowles Loom Co., Providence, R. I.

1 Mason Gingham Loom, 4x1 box, made by the Mason Machine Works, Taunton, Mass.

1 fancy cotton loom with 25 harness dobby, made by the Mason Machine Works, Taunton, Mass.

1 Northrop magazine loom, made by the Draper Co., Hopedale, Mass.

2 English plain looms, donated by Stoddard, Haserick, Richards & Co., Boston, Mass.

1 heavy sateen loom, made by Whitin Machine Works, Whitinsville, Mass.

1 plain print loom, made by Kilburn & Lincoln, Fall River, Mass.

It will be seen that the above list of machinery includes all the varieties that are used in cotton mill work in the United States, which affords an opportunity of weaving a very wide range of goods.

This department is well lighted throughout with inverted arc lamps. The shafting and pulleys are from Jones & Laughlins of Pittsburg, Pa., and the room is humidified by the apparatus of the American Drosophore Co.

Design Department.

The machinery room on the third floor of the building is devoted to hand loom weaving, and the necessary power machines which are used for the preparation of warp and filling for these looms.

The room is equipped with a number of hand looms adapted to the use of the students in the experimental work, and in putting into practice the theory of designing that they learn in the school, and to enable them, at a small expense, and with little trouble to themselves, to produce the fabrics that they have designed in the course of their studies.

General Equipment.

The power for the machinery is derived from a 40 H. P. engine built by the Buffalo Forge Co. of Buffalo, N. Y., and the steam is generated in a 60 H. P. Cahall safety vertical water tube boiler.

Donations, Loans and Kindnesses Extended.

The Trustees of the school desire to acknowledge donations received from, and courtesies extended by, the following firms:

The A. T. Atherton Machine Co., Pawtucket, R. I., 1 combination feeder and breaker.

The Atwood Morrison Co., Stonington, Conn., 1 silk quiller.

American Moistening Co., Boston, Mass., a complete humidifying apparatus.

American Supply Co., Providence, R. I., supplies.

Crompton & Knowles Loom Works, Worcester, Mass., looms.

Covel & Osborn, Fall River, Mass., mill supplies.

Dobson & Barlow, Ltd., Bolton, England, per Stoddard, Haserick, Richards & Co., Boston, Mass., 1 jack frame.

Draper Co., Hopedale, Mass., 1 spooler, 1 warper, 1 twister, and 1 loom.

The Dixon Lubricating Saddle Co., Bristol, R. I., supplies.

D. T. Dudley & Son Co., Wilkinsonville, Mass., hand loom shuttles.

T. C. Entwistle, Lowell, Mass., 1 warper.

Excelsior Loom Reed Works, Pawtucket, R. I., reeds for all looms.

Felten & Guilleaume, Carlswerk, Mulheim, Germany, 30,000 wire heddles and 300 shafts for same.

Factory Insurance Co., Hartford, Conn., sets of mill plans for students.

General Fire Extinguisher Co., Providence, R. I., complete equipment for fire protection.

J. Hetherington & Son, Manchester, England, per William Firth, Boston, Mass., 1 comb and 1 sliver lap machine.

Howard & Bullough American Machine Co., Pawtucket, R. I., 1 finisher lapper, 1 card, 1 drawing frame, 1 second intermediate, 1 spinning frame, and 1 cone winder.

Kilburn & Lincoln, Fall River, Mass., one loom.

Lambeth Rope Co., New Bedford, Mass., driving ropes.

Laminar Fibre Co., North Cambridge, Mass., cash donation.

S. C. Lowe, New Bedford, Mass., mill supplies.

Mason Machine Works, Taunton, Mass., 1 card, 1 railway head, 1 ribbon lapper, 1 mule and 2 looms.

Metallic Drawing Roll Co., Indian Orchard, Mass., metallic rolls for drawing frames and comber.

John Ormerod & Son, Castleton, Eng., roll leather.

Providence Machine Co., Providence, R. I., 1 first intermediate.

E. H. Pierce, New Bedford, Mass., mill supplies.

Saco & Pettee Machine Shops, Newton Upper Falls, Mass., and Biddeford, Maine, 1 card and 1 drawing frame.

Nat C. Smith, Architect, New Bedford, Mass., the building plans.

Stoddard, Haserick, Richards & Co., Boston, Mass., 2 looms.

Thayer & Co., Incorp., Boston, Mass., Donation.

The Universal Winding Co., Boston, Mass., 2 winding machines.

The Union Belting Co., Fall River, Mass., all belting required.

Whitin Machine Works, Whitinsville, Mass., 1 spinning frame, 1 reel and 1 loom.

Woonsocket Machine & Press Co., Woonsocket, R. I., 1 slubber.

Woonsocket Reed and Shuttle Works, Woonsocket, R. I., shuttles.

W. R. West, New Bedford, Mass., roll covering.

New England Cotton Manufacturers' Asso., Boston, Mass., a file of the transactions of the Association.

New Bedford as a Location for a Textile School.

New Bedford is an especially suitable location for an institution of this character. With but one exception (Fall River) this is the largest cotton manufacturing city in the country, its spindles numbering 1,282,332 and looms 23,610. It has long been famous for the fine cotton yarns, fancy woven fabrics, novelties, and generally high grade of goods manufactured within its limits.

High grade combed yarns are produced in New Bedford to a greater extent

than in any other city, while the mills are engaged in the manufacture of fine shirtings, muslins, lawns, sateens, lenos, checks, pique, jacquard, and other fancy fabrics to an extent unknown elsewhere. New Bedford's great advantage in this respect can be attributed principally to the fact that her mills are nearly all of recent construction with the most improved and up-to-date equipments. With but two exceptions her eighteen great textile corporations, operating more than forty mills, have all been organized since 1881. The environment of these mills is in itself a benefit to those students who select the New Bedford Textile School as the institute in which to learn the mill business.

New Bedford is one of the healthiest of the manufacturing cities in the United States, picturesquely situated on the extreme south shore of Massachusetts, it enjoys the mildest climate in New England and has no malaria, and thus offers great advantages to the student.

It is within short distances of Fall River, Pawtucket, Providence, Taunton, Woonsocket and other large cotton machinery building centres.

The Object of the New Bedford School.

The New Bedford Textile School is an institute of textile technology with especial regard to the manufacture of cotton and subjects allied thereto

The Legislature of the Commonwealth of Massachusetts, in the act under which the Trustees of the New Bedford Textile School were incorporated, gives as the purpose of the Corporation that of "establishing and

maintaining a textile school for instruction in the theory and practical art of textiles and kindred branches of industry."

This act has been taken advantage of by a Corporation consisting of many of the leading manufacturers of New Bedford and Taunton, Mass., secretaries of the labor unions of New Bedford, and several of its prominent citizens, the object being to insure the establishment of a school in which the young men of the city who are desirous of being trained for entering the cotton manufacturing industry, in which the mill workers who desire to advance and be promoted in their respective departments, as well as those men who may make New Bedford their temporary residence in order to obtain a thorough cotton mill education, may have every facility to learn the theory as well as have the practice of cotton manufacture in all its details from the raw cotton to the finished fabric, and also have instruction in the scientific principles which underlie the construction of the machinery and its operation and the artistic principles which are involved in the production of desirable and ornamental fabrics.

The communities of manufacturers of the leading European nations now realize that the trade school is a very valuable, if not a supreme necessity to their business, and textile educational institutions are found in England, France, Germany, Belgium, Italy, Switzerland and Russia in large numbers. With one exception, they have only been introduced within recent years into the United States, and it is the determination of the Trustees that the New Bedford Textile

School shall be second to none in its special suitability for teaching the manufacture of cotton textiles.

The whole of the machinery in the school is absolutely modern, being constructed especially for the school. It is all high grade, has latest improvements, and is especially built to afford facilities for all kinds of experimental work and represents all the leading types of machines from the best machine builders in the United States.

It is unusual in a textile school to have so very many varieties of machinery, but in this case, as will be seen from the list of machinery on pages 10 to 21, almost all the leading machine shops are represented, and in many cases machinery is installed in duplicate and triplicate so as to accustom students to operating machinery of various makes, and to show various methods of setting and fixing the same.

Instruction will be given both in the day and evening. The day courses are intended to qualify suitable students to hold positions of responsibility in textile manufacturing establishments. Moderate fees will be charged for these courses. Evening instruction, similar to the day courses, on the same machinery, and by the same teachers, will be given for the benefit of workers in mills and machine shops who cannot spare the time or money for day courses. In the evening classes instruction will be given in sections so as to give the greatest possible facilities to mill workers to obtain such instruction as they may require.

This sectional curriculum is to some extent adopted in the day courses as a

feature of the school which will commend itself to those men who have a very limited period which they can devote to taking a day course of study, so that a man may enter for a period of several months in order to qualify himself in some special branch of work. This principle is adopted so that a maximum of information on any special subject may be obtained in a minimum of time.

At the same time records are made for future reference regarding the progress made while a student is taking any section of study, and it will be possible for him to continue studies in any future year, the section of instruction already completed being accepted as a portion of the work of the full course.

The cotton mill as usually conducted is not particularly adapted for giving a young man a technical education. It is an enterprise for making yarns and goods rather than developing overseers or superintendents. In fact, for a combination of reasons, a young man often finds difficulty in obtaining all the information that he desires in a mill, while the management is often inconvenienced by his desire to gain experience.

The opposite is the case where the primary object of the lecturers and instructors is to instill all the information possible, and there can be no doubt but that two years judiciously spent in the New Bedford school are equal to five years of aimless wandering from department to department in a mill, without any settled plan of procedure, or without the guiding influence of instructors.

There is no one mill in which there is so large a variety of machinery as in the New Bedford Textile School. This consequently affords the student a bet-

ter opportunity of becoming acquainted with various machines and methods than could be found in one manufacturing establishment.

Staff of the School. The school is in charge of Managing Director C. P. Brooks, M. S. A., whose experience in the organization and management of Textile schools and the superintendence of cotton mills, is extensive. He has charge of the Cotton Picking, Carding and Spinning Department, in addition to undertaking the duties of Managing Director, and will be assisted in this and other departments of the school by fully qualified men of practical experience.

Among the appointments already made are those of Mr. Thomas Yates, to be Principa' of the Weaving Department, Mr. James T. Broadbent, to be Assistant Instructor of the Cotton picking, Carding and Spinning Department, and Mr. Samuel Holt to be Assistant Instructor in Designing and on hand loom work. Mr. Thacher E. Crocker has charge of the Power Plant and Miss E. Louise Conniff is Registrar and Stenographer. Other appointments will be made before the opening of the Fall Term, when the list of assistant instructors will also be published.

Day Courses of Instruction. The courses of instruction in the day school are arranged with a view to preparing men for various positions in cotton mills, and students may enter for any one of the following courses:

Course No. 1, General Cotton Manufacturing Course,

Course No. 2, Weave Mill Superintendent's Course,

Course No. 3, Designer's Course,

Course No 4, Mill Engineer's Course,

Arrangements will be made, if a sufficient number of students enroll, for Course No. 5, suitable for men intending to hold a position in a dry goods commission house, and

Course No. 6, as preparation for a superintendency of a yarn mill.

It is not intended that any one of these courses shall occupy more than two years to complete, while some of them only occupy one year, thus giving facilities for those students whose time for study is limited.

It is possible for a diligent student to complete the full course in two years by serious, constant application to study.

Candidates are strongly recommended to take the regular cotton manufacturing course, which is the most comprehensive and valuable of any of the courses in the school, and, where a student is in doubt as to what his ultimate occupation will be, or what position to prepare himself for, no mistake will be made by electing to study the regular course of the school.

Cotton Manufacturing Course.

A Two Years' Course.

COURSE OF STUDY FIRST YEAR.

Plain Weaving. The construction of the plain loom. The principle movements in weaving. Methods of shedding. Open and close sheds. Relative advantages. Shedding motions. Shedding by cams. Auxiliary shafts. Varieties of cams. Construction of cams.

Picking motions. Different methods of picking. Shuttles. Shuttle boxes. Shuttle guards. Tight and loose reed looms. Protector motions. Reeds. The use of the reed.

Beating up. The lay and its construction. Method of obtaining the eccentricity of the lay. Long and short cranks.

Let-off motions. Bartlett, Thompson, Morton, Shepard and other let-off motions.

Take-up motions. Their use in connection with the let-off motion. Various makes of take-up motions. Changes of take-up.

Filling stop motions. Their construction and operation.

Temples. The various makes and their uses.

The Draper loom. Special features of its construction. The operation of the magazine, the stop motion and other special features of this loom.

Special features of various makes of looms, including Crompton, Knowles, Kilburn & Lincoln, Whitin, Mason, Stafford, Colvin, English and Lowell looms.

The management, operation and fixing of looms. Putting in warps. Faults and remedies in weaving and fixing. Calculations directly connected with plain weaving.

Fancy Weaving. Looms adapted to weave twills and satins. Looms for the use of various colors of filling. Drop box motion. Circular boxes. Multipliers. Building of chains for boxes.

Looms adapted to weaving fancy cloth with dobbies and jacquards. Single acting dobbies. Double acting dobbies. Dobbies with single and double cylinder. Chain pegging for dobbies. Under motions for dobbies. Dobby looms combined with other motions for special purposes, such as looms adapted for weaving leno, checks, blankets, handkerchiefs, towels and other goods.

The principle of construction of jacquards. Single and double lift jacquards. Jacquard machines with one and two cylinders. Harness lines. Lingoes. Comber boards. Tieing up jacquards. Cross border and other jacquard machines.

Designing. The various classes of fabrics. The representation of fabrics on paper. Design paper and its uses. The methods of obtaining pattern. Twills, satins, fancy and diagonal twills. Combinations and arrangement of twills. Harness drafts and their representations on paper. Methods of obtaining harness drafts. Chain drafts and their representation on paper. Method of

obtaining chain drafts. Doup plans for lenos. The analysis of fabrics with a view to their reproduction. The particulars to be obtained by analysis, and method of obtaining same most expeditiously and advantageously.

The dissection of ply fabrics as compared with that of single fabrics.

Fabrics usually made by harnesses. Bedford Cords, pique, imitation leno, figured muslins, dimity, leno, spots, satin and other stripes.

Cloth calculations. Yarn calculations. Calculations regarding ply yarns. Reed and harness calculations. Calculations of contraction in length of warp and weight of material required in either warp or filling to produce given fabrics. Calculating particulars of a piece of cloth from the information obtained in dissecting small samples.

Hand Loom Work. The hand loom, its construction and use. Practice on the hand loom in weaving fabrics from original and other designs.

Mechanism and Machine Drawing. Definition of a machine, mechanism, motion and rest. Direction of motion. Continuous motion. Reciprocating motion. Intermittent motion. Velocity. Angular and circumferential velocity. Rolling contact. Friction gearing. Grooved gearing. Pitch surface and pitch lines. Shafting, pulleys and belting. Tight and loose pulleys. Length of belts. Crossed and open belts. Quarter turn belts.

Gears in trains. Spur, bevel and mitre gears. Pitch of gears. Shape of teeth. Calculations regarding shafting, pulleys, gearing and belting.

The elements of mechanism. Levers. Wheel and axle. Pulley blocks. The wedge and inclined plane. The screw and its applications.

Machine Drawing. Drawing instruments. Their use and care. Drawing boards. Paper. T squares. Varieties of ink, etc. Different lines used in drawings. Methods of representing different materials on drawings. Different views of an object. Different views of simple objects in orthographic projection. Drawing to scale. The use of shade lines. Drawing a gear, a lever, a valve, or some simple part of a machine with care and accuracy.

Warp Preparation. Various methods of preparing cotton warps. Long and short chain systems.

The spooler, its use and construction. Different makes of spoolers. The operation and setting of a machine.

Warpers. The object of the warper. Its construction and operation. Speeds, settings, etc. Warpers with and without cone drive. Warper slow motions. Faults in warpers and their correction.

Sizing or dressing yarns. Material used. Methods of mixing same. Suitable materials for various purposes.

The slasher. Its construction and use. Construction of the different parts of the slasher. Faulty and good slashing.

Preparing the warp for the loom. Methods of drawing in. Explanation of drafts. The construction of reeds and harnesses. Drawing-in frames.

Variations from the above system for special purposes, such as used in gingham and other mills.

COURSE OF STUDY SECOND YEAR.

Cotton Picking, Carding, Combing and Spinning.

Raw cotton. Its varieties. The cultivation of cotton. The preparation of cotton for the market. Cotton ginning. Cotton as an article of commerce. The selection of cotton, its suitability for different purposes.

Cotton yarn mill machinery. Lists of processes in cotton mills for different numbers of yarns. Proper sequence of processes.

Objects of blending cotton. Methods of mixing same. Bale breakers.

Picker rooms. Automatic feeders. Construction of different varieties of feeders. Their capacity and suitability for the purpose intended.

The cotton opener. Its use and object. Various styles of openers. Setting and adjustment of openers. Connection of feeders to openers. The various styles of trunks. Calculations in connection with openers. Breakers. Intermediate and finisher lappers. Different styles and makes of machines. Use and object of the lapper. Description of aprons, beaters, bars, screens, fans, lap heads, evener and measuring motions, etc. The setting and adjustment of lappers. Calculations in connection with lappers.

Carding. Different methods of carding. Revolving flat card. Its principal parts described, including feed, licker, cylinder, doffer, coiler, screens and flats. Different setting arrangements. Speeds of different parts. Other methods of carding. Top flat cards, roller and clearer, and other cotton cards. Clothing, grinding, setting and stripping cards.

The sliver and ribbon lap machine. Construction of American and English machines. Methods of operating same. Setting and adjusting same and calculations in connection therewith.

The cotton comber. The construction of the comber, its use and objects. Comber setting. Comber calculations. Operation and management of combers.

The railway head as used either independently or combined with sections of cards. Single and double railway heads. The use and object and disadvantages of railway heads. Eveners, draft calculations, etc.

The drawing frame. Methods of arranging and constructing drawing frames. The use and objects of the frame. Gearing, weighting, stop motions, varieties of rolls, etc.

Fly frames. The different fly frames usually used and the use of each. Slubbers. First and second intermediates. Roving or jack frames. The construction and use of the fly frame. Description and use of the different parts. Calculations in connection therewith. Changing and fixing frames, etc.

Spinning, both on frame and mule. The spinning frame. Its construction and use. Its principal parts, such as creels, rolls, rings, travellers, speeders, builder motions, etc.

The spinning mule and its uses. The special features of the mule. Description of the head stock, the cam shaft, mule carriage and other parts. The construction and use of each part of the mule. Different movements in the mule and the timing of the same. The copping rail and the building of a cop. Faults in mule spinning and their correction.

Processes for handling the yarn subsequent to spinning. Reeling. Bundling. Gassing. Twisting. Doubling. Cabling. Spooling. Warping. Balling and baling cotton yarns.

Management, production, calculations and general information regarding each process.

Mill Engineering. Cotton mill construction. Different styles of building mills. Strength of material. Thickness of walls. Features in the arrangement of the rooms of a mill. Proper sequence of processes and arrangement of machinery. Machinery for special plants. Relative positions of power houses, passages, elevators, dust rooms, etc. Steam and water power plants. Power transmission. Heating, plumbing, humidifying and ventilation of cotton mills, fire protection, etc. General mill management. Statistics. Costs. Methods and organizations. Principal varieties of goods manufactured and necessary machinery for same. Principal markets for goods. Duties of mill officials.

Advanced Designing. Color as applied to fabrics. Practical lessons in color effects. Color definitions. Contrast and harmony of colors. Fabrics depending on color for satisfactory results, such as ginghams, stripes, and figured fabrics.

Fancy goods other than plain and twills. Leno, gauze or cross weaving. Leno weaving from 1, 2 and 3 beams. Cloths made with or ornamented by extra warp or filling, or both. Box welts. Double cloth pile fabrics, such as velvets, corduroys and plush.

Jacquard designing. Sketching for same. Making design paper. Figures for jacquard designs. Designing for jacquard work.

Mechanism and Machine Drawing. Advanced work in machine drawing, leading up to making assembly drawings of different parts of a machine and sectional drawings of machinery. Tracing drawings. Making blue prints, etc.

Machine design. Features in general construction and design of machines. Strength of materials and parts.

General. Facilities will be given in the second year for the students to perform experimental work, and each student graduating will be expected to write a thesis,

or perform some special work in connection with some matter of general interest to a cotton manufacturer.

Various subjects will be added to the above courses from time to time, as may be found necessary to suit the requirements of the different students.

Course No. 2.

Weaving Mill Superintendent's Course.

A One Year Course.

Warp Preparation. Long and short chain systems of preparing cotton warps, spoolers, warpers, slashers, sizing materials, size mixing, reeds, harnesses, drafts, drawing-in, etc.

Weaving. A full course of instruction in all the different varieties of plain and fancy looms, their use, construction and methods of operation. This includes plain looms, dobby looms, box looms, jacquard looms.

Designing. The representation of fabrics on paper, methods of obtaining chain drafts, harness drafts. The dissection and reproduction of fabrics. Fabric calculations, and a full course in designing all the ordinary styles of cotton goods from plain to jacquard fabrics.

Hand-loom work in weaving original and other designs.

Machine Drawing. The use of drawing instruments, drawing materials, the methods of representing machine parts on paper, the use of scales, shade lines, different methods of representing materials on paper, and such instruction in machine drawing as will lead up to making an assembly of different parts of a machine.

Mechanism. Course of instruction in machines, motion, velocity, gearing, shafting, pulleys, shapes of gear teeth, etc.

Course No. 3. Designer's Course.

A Two Years' Course.

This, in the first year, follows the lines of the general cotton manufacturing course. The second year of this course, however, is different, almost exclusive attention being given to designing and practice on hand and power looms.

Course No. 4. Mill Engineering Course.

A Two Years' Course.

This follows the lines of the general cotton manufacturing course, excepting that especial attention will be given to instruction with regard to power

plants, mill designing and engineering and transmission of power, the nature of which will depend to some extent on the number of students entering for the course.

Course No. 5. Yarn Mill Superintendent's Course.

A One Year Course.

If a sufficient number of students enroll, a course will be given with especial regard to students wishing to qualify for the position of a cotton yarn mill superintendent or of overseer in a cotton yarn mill.

This course is also suitable for the requirements of those intending to engage in the cotton yarn commission business.

Course No. 6.

Dry Goods Commission House Course.

A One Year Course.

If a sufficient number of students enroll, a special course will be arranged with regard to the manufacture and sale of dry goods.

The manufacture of the goods will not be treated of as technically as in the case of students who intend to take up the position of a mill superintendent, while other subjects, such as designs, materials, markets, costs, etc., will be dealt with more fully than usual.

Languages. Should any student desire to include in his course the study of the French, Italian, or German languages, arrangements will be made for these to be studied under Professor Adolph Schumacher of the Swain Free School of New Bedford, Mass.

Students desiring to pursue advanced academic studies concurrently with those in the Textile School have an excellent opportunity of doing so in the Swain Free School, founded by the late Governor Swain, and of which the principal is Prof. Andrew Ingraham.

Chemistry and Dyeing. No course in dyeing is included in the curriculum of the New Bedford Textile School at present but arrangements will be made for any student desiring the same to study Chemistry with a view to preparation for a course in Textile Chemistry and Dyeing at the Swain Free School under Professor William H. Bassett, S. B. Mass. Institute of Technology.

Day Classes.

Conditions of Admission. Candidates for admission to day classes must be at least 14 years of age, and may be of either sex, or any nationality. They must have certificates of good moral character, and those who have been students of other technical institutions, colleges or universities, will be required to furnish certificates of honorable dismissal from those institutions. Candidates having a graduation certificate from a high school or other educational institution satisfactory to the Managing Director will be excused from taking the entrance examination. Other students will be required to pass an entrance examination in Arithmetic and English.

The examination will be held in New Bedford only. The examination for residents of New Bedford will be held in the lecture hall of the school on

Wednesday, September 13, 1899, at 10 a. m. and for non-resident candidates on Friday, September 29, 1899, at 10 a. m.

As no facilities are provided in the day school for giving academic instruction, candidates are especially recommended to fully qualify themselves in these branches, more especially in mathematics, before taking the entrance examination.

All candidates, whether desiring to be enrolled on certificate or by passing the entrance examination, must fill out the application blank accompanying this catalogue, which should be delivered at the school before September 12th, 1899.

The certificates of those candidates who desire to be enrolled on certificate must be shown to the Managing Director and approved by him, in the case of New Bedford students before Tuesday, September 12th, 1899, and in the case of non-resident students before Saturday, September 30th.

For conditions of admission to evening classes, see page 49.

No candidate will be registered as a student until he has obtained a card of admission and paid his first term fees in advance.

Blank forms of application for admission are mailed with this catalogue or may be obtained at the school.

Students must state on their application blanks what course of study they desire to pursue, and for what position they desire to prepare. The privilege of changing from one course to another will be extended to all students during the first month of the fall term, but after November 1st, 1899, no request

for a change in any course can or will be entertained until the commencement of another school year.

Fees. The fee for tuition in the day classes is $50.00 per term of approximately four months, making $100.00 for the school year, excepting for those students who, immediately prior to their application for enrollment, were non-residents of the Commonwealth of Massachusetts. In the latter case the fee will be $75 per term or $150 per year, in accordance with an act of the Legislature of Massachusetts.

Places in the school will be reserved for day students by an advance payment of $25, which will be appropriated towards the tuition fee. No fees will be refunded either to the day or evening students, excepting by special action of the Board of Trustees.

The above fee includes free admission to any of the evening classes in which there is accommodation and which the day student may desire to attend, New Bedford mill workers having the preference.

Students must provide books, stationery, tools and overalls, and pay for any breakage or damage that they may cause, in addition to the above named fees.

Fees are strictly payable in advance.

The School Year. The fall term of '99 will begin on Monday, October 2nd, 1899 and end on Friday, January 26th, 1900.

The spring term of '00, will begin on Monday, January 29th, 1900, and end on Wednesday, June 6th, 1900.

The School Hours. The school hours will be from 8.30 a. m. to 12.30 p. m. each morning, excepting Saturdays, with afternoon session from 2 to 5 o'clock, excepting on Wednesdays and Saturdays.

Vacations. There will be vacations on all legal holidays; also from Friday, Dec. 22nd, 1899, to Monday, Jan. 8th, 1900, not inclusive. There will also be short vacations after each term and half term examination.

Attendance. Each student will be scheduled for attendance at the school through the week at the hours previously named. These schedules must be strictly adhered to, and each student will be expected to attend all lectures, recitations, and demonstrations of practical work excepting when permission to be absent has been obtained from the Managing Director.

A register of attendance will be marked at each meeting of the class, and an excessive number of absences during a term will debar a student from presenting himself for examination, and necessitate his repeating the work of the term or the year.

In cases of unavoidable absences, either from sickness or other cause, a written explanation must be sent. Where especially requested by parents, cases of absences of students will be reported to them weekly or otherwise.

Preparation. The Managing Director of the school is frequently asked by those students who have some time to wait before entering upon the course of study as to what preparation they might advantageously be making for their course in the Textile School. In such cases the candidate is advised to study arithmetic carefully and completely, to become acquainted with elementary algebra and geometry, and to practice free hand and mechanical drawing.

Examinations, Certificates and Diplomas. Examinations will be held as tests of the student's work at the mid-fall term, end of fall term and mid-spring term.

The annual examination will be held at the end of the spring term. Results of these examinations, together with the student's record as to satisfactory performance of other work and also as to conduct and regularity of attendance will be taken into account in ranking students at the end of each year, and for graduation. Unsatisfactory progress as shown by any of the term examinations may necessitate the student repeating his studies at the discretion of the Managing Director.

Diplomas will be given on the satisfactory completion of a course of study extending over the period named in connection with each course on pages 27 to 38, if the student's record is otherwise satisfactory.

Certificates will be given at the close of the first year's course to students taking a two years' course, if they have honorably and satisfactorily completed

their course, which will be supplemented by a diploma on the completion of the second year's work.

Students taking special courses, or a one year course, will be entitled to a certificate if they have honorably and satisfactorily completed the course of instruction scheduled.

Day students are required to spend at least two hours daily out of school hours in study, such as recording lectures and other notes, and in entering up note and design books. These will be examined by the instructors periodically, and the care and accuracy with which these books are kept will be considered in ranking students. No student will be considered qualified to pass the mid-term or term examination, unless such books have been kept and entered up satisfactorily. Deficiencies or omissions in any study must be made up by the student, or he will be required to repeat the work of the whole year, at the discretion of the Managing Director.

Board and Rooms.

New Bedford is unusually desirable as a residential city, and students will find numerous houses of private families, and boarding houses where they may obtain rooms and board.

No requirements are made as to residence of out of town students, although facilities are given by having addresses of suitable houses on file at the school.

No definite estimate can be made of the cost, as this varies entirely on the tastes of the student, but rooms and board may be obtained for from $4.00 per week, upwards.

Tools and Materials. The cost of these ordinarily does not exceed $10.00 per year, or in some cases $15.00 for day students.

Students will be required to purchase such materials, text books, tools and apparatus as may be required from time to time by the principal of each department with the approval of the Managing Director.

The tools and supplies required vary with the courses for which the student enters. All day students require a suit of overalls, preferably of blue check pattern, sample of which can be seen at the school, or will be mailed on request, a set of drawing instruments, a T. square, rubber, pencils, eraser, bottle of drawing ink, thumb tacks, architect's scale, 9 in. triangle, pair of calipers, and several note books, lecture record books, and text books.

Conduct. Students will be expected to conduct themselves in a gentlemanly manner in or out of the school, and to be punctual and regular in attendance, polite and orderly in their conduct, decent and respectful in their language.

Rules will be made from time to time with reference to returning all tools, materials and apparatus to their proper places, leaving machinery and appara-

tus clean and in working order, with regard to regular and prompt attendance, and other matters connected with the routine work of the school which each student will be required to observe.

Misconduct, irregularity or lack of observance of the rules indicated above will be considered good and sufficient reasons for the suspension of any student by the Managing Director and for dismissal from the school by the Education Committee and forfeiture of fees paid and of all school privileges.

General Information.

The Trustees of the school will provide a library of books, textile and other papers, for the use of the students from time to time, which may be consulted at such hours and in such a manner as may be decided by the Managing Director.

Lockers are provided free of charge for the use of day students of sufficient size to contain clothing, books and tools. A deposit for the key to such locker is required from each student, which will be refunded when the key is returned.

No charts, books, tools, instruments or other property of the school will be allowed to be removed from the premises under any circumstances, and students are required to obtain the permission of the Principal of the department before using any special apparatus for experimental or other purposes.

No student is allowed to leave the school building between the hours of 8.30 A. M. and 12.30 P. M., and between 2.00 P. M. and 5.00 P. M. when the school is in session, unless with the knowledge and permission of the Principal

of the department in which he should attend, and also with the consent of the Managing Director.

Students may not claim the attention of instructors at other than the regular hours as indicated on the schedules.

All textile materials will be provided by the Trustees, and the products of the machinery remain, or become the property of the Trustees, except by special arrangement.

Arrangements will be made for students to mount, tabulate and retain certain specimens of yarn and fabrics that they have themselves produced, and they will be allowed to retain other specimens by making arrangements with the Managing Director.

It is understood that the Trustees may retain in the school any specimens of student's work, either in books, on paper, or in manufactured material, and for such a period as the Managing Director may determine.

Deposits may be required from time to time to cover possible or probable loss or breakage caused by students.

Evening Classes.

The school will be in session four evenings per week for the benefit of those students who are engaged in mills and work shops during the day time, and who can only devote evenings to study. This department also offers the opportunity, and proposes to provide facilities for practically free education in all or any branches of cotton manufacturing to those who cannot be expected to defray the whole cost of their textile education. No difference is made between the courses of instruction of the evening and those of the day. The same machinery and same instructors are retained for the evening classes, and in order to accommodate the larger numbers of students generally found in the evening technical schools, additional instructors have also been engaged, for the benefit of the evening students alone.

A special feature of the evening instruction in the New Bedford School which is not usually found in technical schools is in the minute subdivision of subjects, so that any one employed in the mill will find in the plan of studies something that will assist him or her, and which will apply to the department in which he or she is daily engaged, and yet will not necessitate their entry for a long course of study in order to get such instruction as is desired. This increases the expense of operating the school, and largely adds to the work of administration, but it has been thought desirable to try the experiment, which will be further extended, if the methods adopted are found popular.

The fees in the evening classes have been reduced to a minimum, and are barely sufficient to cover the cost of lighting the rooms. The only reason for charging any fee is that it is felt that the payment of a fee, however small, tends to cause additional interest in the work.

What has already been stated regarding the school building, the equipment, the staff of instructors, etc., need not be recapitulated in connection with the evening classes, but the following explanation as to how different courses are sub-divided is necessary.

Cotton Picking, Carding and Spinning Department.

Evening Courses of Instruction.

This department will be in direct charge of Managing Director C. P. Brooks, assisted by James T. Broadbent. The instruction will be given by several assistants whose names will be announced later.

Subject A. Cotton Yarn Preparation, including picking and card room machinery, and frame spinning, to be completed in a two years' course, two evenings per week, Monday and Thursday.

Raw Cotton. Its varieties. The cultivation of cotton.

The preparation of cotton for the market. Cotton ginning. Cotton as an

article of commerce. The selection of cotton, its suitabilities for different purposes.

Cotton Yarn Mill Machinery. Lists of processes in cotton mills for different numbers of yarns. Proper sequence of processes.

Objects of blending cotton. Methods of mixing same. Bale breakers.

Picker rooms. Automatic feeders. Construction of different varieties of feeders. Their capacity and suitability for the purpose intended.

The cotton opener. Its use and object. Various styles of openers. Setting and adjustment of openers. Connection of feeders to openers. The various styles of trunks. Calculations in connection with openers, breakers, intermediate and finisher lappers. Different styles and makes of machines. Use and object of the evener and measuring motions, etc. The setting and adjustment of lappers. Calculations in connection with lappers.

Carding. Different methods of carding. Revolving flat card. Its principal parts described, including feed, licker, cylinder, doffer, coiler, screens and flats. Different setting arrangements. Speeds of different parts. Other methods of carding. Top flat cards, roller and clearer and other cotton cards. Clothing, setting, grinding and stripping cards.

The railway head as used either independently or combined with sections of cards. Single and double railway heads. The use and object and disadvantage of railway heads. Eveners, draft calculations, etc.

The drawing frame. Methods of arranging and constructing drawing

frames. The use and objects of the frame. Gearing, weighting, stop motions, varieties of rolls, etc.

Fly frames. The number of fly frames usually used and the use of same. Slubbers. First and second intermediates. Roving or jack frames. The construction and use of the fly frame. Description and use of the different parts. Calculations in connection therewith. Changing and fixing frames, etc.

Management and care of machinery.

Subject B. Cotton combing, together with ribbon and sliver lap machines, to be a one term course, (three months) two evenings per week, Monday and Thursday.

Machines used in connection with combers. Preparation of laps for combers. Construction of the sliver lap machine. Calculations connected therewith. Construction of the ribbon lap machine on American and English principles. Setting and adjusting same, and calculations connected therewith.

Different principles of cotton combers, American and English. Single and double nip combers. The construction of the ordinary comber. Feed rolls, nippers, needles, top combs. Detaching and other mechanism. Cams. Setting of combers. Care and operation of combers. Draft in sliver and ribbon lappers and combers. Defects in combed work and their remedies. Operation and management of combers.

Subject C. Mule spinning, a one term course, three months, two evenings per week, Monday and Thursday.

The mule as constructed by American and English makers. Principles of mule spinning. The general construction of mules. Detailed construction of mule. Carriages, roll beams, head stock, cam shafts.

Winding motions. Backing off mechanism. Hastening motions. Jack and nosing motions. Copping motions. Faults and remedies in copping. Setting and fixing mules. Care and attention required in mule rooms. Calculations.

Subject D. Frame spinning, spooling, warping and slashing, a one year course, two evenings per week, Monday and Thursday.

Students to receive the early part of their instruction in this subject in the cotton yarn preparation and the latter part in the weaving department.

Spinning on ring frames. The construction of frames. Driving and gearing. The construction of the various motions of the frames, including the builder motion. The construction and use of spindles, rings, travellers, separators, etc.

Warp preparation. Various methods of preparing cotton warps. Long and short chain systems.

The spooler, its use and construction. Different makes of spoolers.

Warpers. The object of the warper. Its construction and operation. Speeds, settings, etc. Warpers with and without cone drive. Warper slow motions. Faults in warps and their correction.

Sizing or dressing yarns. Material used. Methods of mixing same. Suitable materials for various purposes.

The slasher. Its construction and use. Construction of the different parts of the slasher. Faulty and good slashing.

Preparing the warp for the loom. Methods of drawing-in. Explanation of drafts. The construction of reeds and harnesses. Drawing-in frames.

Variations from the above system for special purposes such as used in gingham and other mills.

Cotton Weaving Department.

Mr. Thomas Yates, Principal.

Weaving. *Subject E.* Weaving and loom fixing on all the different makes of American looms. One year course, two evenings per week, Tuesday and Friday.

The construction of the plain loom. The principal movements in weaving. Shedding motions. Open and close sheds. Relative advantages. Methods of shedding. Shedding by cams. Auxiliary shafts. Varieties of cams. Construction of cams. Under and over motions.

Picking motions. Different methods of picking. Shuttles. Shuttle boxes. Shuttle guards. Tight and loose reed looms. Protector motions. Brakes. Reeds. The use of the reed.

The beating up. The lay and its construction. Method of obtaining the eccentricity of the lay. Long and short cranks.

Let-off motions. Bartlett, Thompson, Morton, Shepard and other let-off motions.

Take-up motions. Their connection with the let-off motion. Various makes of take-up motions. Changes of pick gears.

Filling stop motions, side and centre. Their construction and operation.

Temples. The various makes and their uses.

The Draper loom. Special features of its construction. The operation of the magazine, the stop motion and other special features of this loom.

Special features of various makes of looms including Crompton, Knowles, Kilburn & Lincoln, Whitin, Mason, Stafford, Draper, Colvin and Lowell looms.

The management, operation and fixing of looms. Putting in warps. Faults and remedies in weaving and fixing. Calculations directly connected with plain weaving.

Subject F. Fancy weaving, including dobbies and drop boxes, both weaving and fixing, a one year course, two evenings per week, Tuesday and Friday.

Fancy weaving. Looms adapted to weave twills and satins. Looms for the use of various colors of filling. Drop box motions. Circular boxes. Multipliers. Building of chains for boxes.

Looms adapted for weaving fancy cloth with dobbies and jacquards. Witches. Single dobbies. Double acting dobbies. Dobbies with single and

double cylinder. Chain pegging for dobbies. Under motions for dobbies. Dobby looms combined with other motions for special purposes, such as leno looms, towel looms, blanket looms and others.

Subject G. Jacquard weaving, a one year course, two evenings per week, Monday and Thursday.

The principle of construction of jacquards. Single and double lift jacquards. Jacquard machines with one and two cylinders. Harness. Lingoes. Comber board. Tieing up jacquards. Varnishing. Couplings. Straight, lay over and centre ties. Leno and pressure harness. Cross border and other jacquard machines.

Designing Department.

Subject H. The designing of all kinds of cotton fabrics, including cloth dissection, cloth construction and hand loom work, a two years' course, three evenings per week, Monday, Tuesday and Friday.

Designing. The various classes of fabrics. The representation of fabrics on paper. Design paper and its uses. The methods of obtaining pattern. Twills. Satins, fancy and diagonal twills. Combinations and re-arrangement of twills. Harness drafts and their representation on paper. Methods of

obtaining harness drafts. Chain drafts and their representation on paper. Methods of obtaining chain drafts. The analysis of fabrics with a view to their reproduction. The particulars to be obtained by analysis, and method of obtaining the same most expeditiously and advantageously.

The dissection of ply fabrics as compared with that of single fabrics.

Fabrics usually made by harnesses. Bedford Cords, piqué, imitation leno, figured muslins, dimity.

Yarn calculations. Calculations regarding ply yarns. Cloth calculations. Reed and harness calculations. Calculations of contraction in length of warp, and weight of material required in either warp or filling to produce given fabrics. Calculating particulars of a piece of cloth from the information obtained in dissecting small samples.

Color as applied to fabrics. Practical lessons in color effects. Color definitions. Contrast and harmony of colors. Fabrics depending on color for satisfactory results, such as ginghams, stripes, spotted and figured fabrics.

Fancy goods other than plain and twills. Leno, gauze or cross weaving. Leno weaving from 1, 2 and 3 beams. Cloths made with or ornamented by extra warp or filling, or both. Box welts. Double cloth pile fabrics, such as velvets, corduroys and plush.

Jacquard designing. Sketching for same. Transferring to design paper. Figures for jacquard designs.

Mechanical and Mathematical Departments.

Subject. Textile calculations, including arithmetic; also spinning, weaving, shafting, and other calculations. One year course. Fall term, two evenings per week, Thursday and Friday. Spring term, two evenings per week, Tuesday and Friday.

J First Section. Powers and roots. The extraction of square roots. Percentage. Proportion. Mensuration. Measurements of squares, rectangles, triangles, circles, cylinders and calculations connected with finding the contents of such figures. Circumference and diameters of circles. Shafting calculations. Figuring velocities. Required sizes of gears and pulleys. Pitch and pitch circles. Leverage. Principles of calculating leverage.

Yarn calculations. Methods of numbering yarns for cotton, silk and other materials. Methods of finding the number of yarns by various methods. Reeling or sizing yarns. Double and other ply yarn calculations. Fall term, Thursday and Friday evenings.

K Second Section. Drafts. The principle of drafting. Calculation of draft in drawing, slubbing, roving, spinning and other machinery. General principles of calculating constants for draft gears, twist gears, etc. General principles of calculating changes of gears for various purposes. Cotton mill machinery. Calculations of production of machinery. Spring term, Tuesday evenings.

L Third Section. Calculations connected with warp preparation and weaving. Spooling, warping and slashing calculations. Calculating weights of warp beams. Calculations of take-up motions on looms, size of shed, size of cams, etc. Calculations of weight and proportions of warp and filling required to produce certain fabrics. Calculations regarding shrinkage and contraction in warp or filling. Calculating costs of fabrics. Calculating extent of foreign matter in fabrics. Calculations for reeds and harnesses. Spring term, Friday evenings.

Drawing Department.

Arrangements will be made by which students shall have facilities for studying Geometry, Machine Drawing and Freehand Drawing. Further information regarding these classes will be given later.

Subject M includes a course of instruction in Geometry and is intended to occupy from 20 to 30 weeks, two evenings per week.

Subject N includes a course of instruction in Machine Drawing somewhat similar to the one indicated under the head of the day course, first and second year. It is intended that this course shall occupy two years, two evenings per week and from 20 to 30 weeks per year.

Subject O includes a course of instruction in Freehand drawing intended to lead up to sketching for jacquard designing and other branches of ornament as applied to textiles.

Entrance Requirements and Enrollments. Students who are in possession of a graduation certificate from a grammar or a high school will be admitted to the evening classes without passing an entrance examination. Candidates presenting to the Managing Director a certificate showing that they have taken a course of instruction in any institution corresponding to, or higher than a grammar school, or who can give satisfactory evidence of their ability to read and write English, and of a knowledge of elementary arithmetic will be excused from an entrance examination, at the discretion of the Managing Director. Students must be at least 14 years of age.

All other candidates for evening classes will be required to pass the entrance examination, which will be held on Wednesday, October 11, 1899, in the lecture hall of the school at 7.30 P. M. The subjects of this examination will be reading and writing English, and elementary arithmetic, to include addition, subtraction, multiplication, and division of whole numbers and fractions.

It is not intended to make this examination sufficiently stringent to debar from attendance any except those whose education is so deficient that they would not derive any benefit from the school, and who would tend to retard the progress of the other students in the same class.

Fees. The fees for the evening classes will be uniformly $2.50 per term of three months, in each subject, as indicated by the letters from A to O. This is on a basis of two evenings per week, so that students taking two subjects and attending four evenings per week will pay $5.00 per term.

The only subjects which will be an exception to the above rule are M, N and O, in which instruction will be given free to residents of New Bedford.

Examinations. Examinations of the evening students will be held at the end of each term, and on the results of these examinations, considered together with the care and attention that has been devoted to entering up the lecture and other record books, the working out of designs and other work required out of school, certificates will be awarded. These certificates will specify definitely what section of study has been taken by each student, and the progress that has been made in same, and will only be awarded where the studies have been completed to the satisfaction of the instructor and Managing Director. A permanent record is kept of the work of each student. Should any one desire to take a sufficient number of sections of study to complete a diploma course, such as is indicated in connection with the programme of the day classes, this may be arranged and as each section is completed a certificate will be awarded and ultimately the diploma given when all the sections of the studies which make up the diploma course have been completed.

Length of Session. Evening school will be in session from Monday, October 23rd, 1899, to Tuesday, April 3rd, 1900, excepting on all legal holidays and other vacations as indicated in the school calendar and on page 42.

The school will be open on Monday, Tuesday, Thursday and Friday evenings, the classes being held from 7.15 to 9.15 p. m. On a following page a preliminary schedule for the evening classes is given, which is liable to alter-

ations, according to the number of students enrolling for each subject, which may necessitate a rearrangement of the hours allotted for the use of various class rooms and machinery rooms.

Tools and Materials. All students in the evening classes will be required to purchase from time to time such books, tools and materials as may be required by the Principals of the different departments with the approval of the Managing Director. The cost of these varies according to the subject selected, but as a rule the cost does not exceed $3.00 for each student for the necessary materials to commence with, and $1.50 or $2.50 per term subsequently.

Each candidate for admission to the evening class must fill out an application blank for enrollment, which may be obtained at the school, and which must be delivered at the school before September 29th, 1899, together with the notification of his intention to take the entrance examination. Candidates not intending to take the entrance examination, but to enter on certificate as named on page 60, must present to the Managing Director such evidence or certificate on or before October 6th, 1899.

It is strongly recommended to those candidates whose education is not equal to the graduating standard of the grammar school, that they enter the evening grammar school, as this will enable them to make much more rapid progress later in the evening Textile School.

Evening Classes. Plan of Studies.

ROOM.	*MONDAY.*	*TUESDAY.*	*THURSDAY.*	*FRIDAY.*
Cotton Room.	C. Practice (1).	A. Practice (3). C. Practice (2).	A. Practice (1). B. Practice (1).	A. Practice (2). B. Practice (2).
Class Room. 1st Floor.	O.	M.	O.	M.
Weave Room.	D. Practice (1). E. Practice (2).	D. Practice (2). F. Practice (1).	D. Practice (3). E. Practice (3). G. Practice (1).	E. Practice (1). F. Practice (2).
Lecture Hall.	A. Lecture and Recitation.	E. Lecture & Recit.	D. Lecture & Recit.	F. Lecture & Recit.
Class Room. 2d Floor.	G. Lecture & Recit.		C. Lecture & Recit.	
Hand Loom Room.	N (2).	Hand Loom practice (3). N (1).	H. Hand Loom practice (2). N (2).	H. Hand Loom practice (1). N (1).
Design Room. 3d Floor.	H. Lecture & Recit.	H. Analysis practice (1).	H. Analysis practice (2).	H. Analysis practice (3).
Class Room. 3d Floor.	B. Lecture & Recit.	K. Lecture & Recit. Spring Term.	J. Fall Term. Lecture & Recit.	J. Fall Term. L. Spring Term. Lecture and Recit.

For references to the subject letters see pages 50 to 59.

The general arrangement is to have one evening per week devoted to a lecture and recitation in connection with each subject, and one evening to practical work in connection with the same. In several cases the lecture class is divided up into two or three sections for practical work. This will only be done in case of the classes being too large to be taken together in practical work in one evening. Demonstration evenings are lettered 1, 2 and 3, and practical work will be surely taken on the evening numbered "1", but will not be taken on the evenings numbered "2" and "3" unless the number of students enrolling necessitates same.

Selection of a Course. The Managing Director will be glad to assist candidates in selecting a course, or give them any advice that they may desire, and for this purpose will be at the school each day from 11 a. m. to 12.30 p. m.; also on Monday, Tuesday and Friday evenings, September 18th, 19th and 22d, and on Monday, Tuesday and Friday evenings October 9th, 10th and 13th from 7 p. m. to 9 p. m.

General. In general, and when not otherwise stated above, the rules and regulations and general information given regarding the day classes will apply to the evening classes.

Donations. Addenda to page 19. The trustees desire to acknowledge:—
Shafting and pulleys from Jones & Laughlins, Ltd., Pittsburg, Pa., and
Bobbins and Spools from Fall River Bobbin & Shuttle Co., Fall River, Mass.

THE TEACHING OF COTTON MANUFACTURING A SPECIAL FEATURE OF THIS SCHOOL

STANDARD PRINT.

SMU
ARCHIVES

8595